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| 10/755,015 | 01/09/2004 | Munmaya K. Mishra | EI-7616 | 7752 |

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| EXAMINER |
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LANG, AMY T

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| ART UNIT | PAPER NUMBER |
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3731

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/08/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/755,015

Applicant(s)

MISHRA ET AL.

Examiner

Amy T. Lang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

The new grounds of rejection set forth below are necessitated by applicant's amendment filed on 12/08/2006. In particular, claims 1 and 19-26. This combination of limitations was not present in the original claims. Thus, the following action is properly made final.

All previous rejections and objections not included herein have been withdrawn in light of applicant's amendments filed 12/08/2006.

Response to Arguments

Applicant's arguments filed 12/08/2006 have been fully considered but they are not persuasive.

1. Specifically, applicant argues (A) that Mishra does not disclose a polymer backbone onto which specific groups are grafted since all the reagents are reacted in a one step process.

With respect to argument (A), although the reagents are reacted in one step process, it is the examiner's position that the instantly claimed anilinophenyl methacrylamide is capable of reacting first with the polymer backbone, absent evidence to the contrary. Therefore, the compound is grafted onto the polymer backbone and capable of reacting with the other reagents.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-4, 6-8, 10, 14, 26-29, 31, and 32** are rejected under 35 U.S.C. 102(b) as being anticipated by Kapuscinski (US 4,820,776).

With regard to **claims 1, 26, and 27**, US '766 discloses a polymer backbone grafted with an amine monomer and a phenothiazine derivative (column 3, lines 43-66; column 4, lines 46-54; column 4, line 65 through column 5, line 19). US '766 further teaches that the compounds may be grafted simultaneously onto the backbone so that the polymer is grafted with the phenothiazine derivative (column 6, lines 19-23). This reaction is completed in the absence of an epoxy reactant and conducted in solution (column 5, lines 57-68).

With regard to **claims 2-4, 6, and 31**, the polymer backbone is further disclosed as olefins polymers, diene polymers, vinyl polymers, ethylene-olefin copolymers, or styrene-isoprene copolymers (column 2, lines 3-16).

With regard to **claim 31**, the polymer is also disclosed as copolymer of ethylene and butylene, which clearly overlaps the instant claims (column 2, lines 3-16).

With regard to **claims 7 and 8**, US '766 teaches that the graft copolymer is added to lubricating oil in an amount of 9 wt% (column 6, lines 38-63).

With regard to **claim 14**, US '766 teaches that the graft polymer disclosed functions as a viscosity index improver (column 6, lines 64-68). It would also inherently act as a soot dispersant given that the property of a compound is inseparable from the compound (*In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)).

With regard to **claims 28 and 29**, the grafting of the phenothiazine derivative onto a polymer is carried out in the presence of a catalyst, specifically a peroxide catalyst (column 5, lines 57-64).

With regard to **claim 10**, other additives are also disclosed in the lubricating composition including dispersants and detergents (column 6, lines 50-63).

4. **Claim 9** is rejected under 35 U.S.C. 102(b) as being anticipated by Kapuscinski (US 4,820,776) in view of the evidence given by Ryan (US 5,604,188).

US '766 discloses a graft copolymer comprising a polymer backbone and a phenothiazine derivative. This additive is added to lubricating base oil, specifically Solvent Neutral Oil (column 8, lines 13-20). Although US '766 does not specifically disclose the oil as a mineral oil, US '188 teaches that Solvent Neutral Oil is a mineral oil (column 2, lines 40-46). Therefore, the base oil disclosed by US '766 overlaps the instantly claimed paraffinic and naphthenic oils given by the evidence of US '188.

5. **Claims 1-5, 7, 26-28, 31, and 32** are rejected under 35 U.S.C. 102(b) as being anticipated by Mishra (US 5,135,996).

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US '996 discloses a lubricating composition comprised of a viscosity index improver (column 1, lines 5-12, 57-60). The viscosity index improver is further disclosed as the reaction product of an ethylene-propylene copolymer backbone with 4-anilinophenyl methacrylamide (column 2, lines 20-39, 49-50). The backbone may also comprise diene polymers (column 2, line 66 through column 3, line 2).

The method to produce the viscosity index improver is also disclosed by US '996, which is carried out in solution in the presence of a catalyst (column 3, lines 3-11; column 4, lines 25-57).

US '996 does not specifically disclose the composition comprising base oil, however, the composition is utilized as lubricating oil. Therefore, the composition inherently contains base oil in order to function as a lubricating oil.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 11, 12, 15, 17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapuscinski (US 4,820,776) in view of Kapuscinski (EP 0,461,774 A1).

With regards to **claims 11 and 12**, US '776 discloses a graft polymer additive utilized in fuel oils and lubricant oils, specifically a motor oil, to improve viscosity (column 6, lines 32-50). However, US '776 does not specifically disclose the oil as lubricating a motor, specifically a diesel engine.

EP '774 also discloses a graft polymer additive that it utilized to improve viscosity (page 2, lines 1-3, 43-46). This additive is incorporated into lubricating oils and then employed in internal combustion engines, which encompasses diesel engines (page 5, lines 50-57). Since US '776 discloses a polymer grafted additive added to a motor lubricating oil and EP '774 discloses a polymer grafted additive added to a motor lubricating oil and employed in a diesel engine, it would have been obvious to one of ordinary skill at the time of the invention for the lubricating oil of US '776 to also be utilized in a diesel engine.

With regard to **claim 15**, US '766 discloses the additive as comprising 9 wt% of the oil composition (column 6, lines 50-63).

With regard to **claims 17 and 18**, US '776 does not specifically disclose the lubricating composition as passing a Mack-T 11 test. Since the composition has the same structure as the additive in the instant claims, the additive of US '776 would

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intrinsically display the same results of viscosity increase and soot level in a Mack T-11 test.

9. **Claims 13, 16, 19-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapuscinski (US 4,820,776) in view of Kapuscinski (EP 0,461,774 A1) and Ritchie (US 6,869,919 B2).

The combination of US '766 and EP '774 disclose an additive comprising a polymer grafted with a phenothiazine derivative utilized to lubricate the crankcase of an internal combustion engine. However, this combination does not disclose the composition as lubricating an internal combustion engine with an exhaust gas recirculation (EGR) system.

US '919 discloses that many internal combustion engines comprise cooled exhaust EGR systems (column 1, lines 10-21, 38-43). These systems also comprise cooling the engine with air to form an air-exhaust mixture (column 3, lines 1-15). The motivation for using such a cooled exhaust EGR system and for cooling the engine is to reduce NO_x emissions, which is better for the environment and for power generation and fuel economy (column 1, lines 10-12, 26-27). However, EGR systems cause soot levels to increase until lubricating oils become adversely affected (column 1, lines 45-54). Therefore, Ritchie teaches that the EGR system requires a lubricant to be applied more frequently and preferably also contain specific additives, specifically viscosity modifiers (column 1, lines 55-62).

In light of the above and given that US '766 discloses a specific viscosity modifier in a lubricating composition that works effectively in internal combustion engines, it would have been obvious to one of ordinary skill in the art to utilize US '766 in an engine comprising a cooled exhaust EGR system wherein the engine is cooled using an air-exhaust mixture in order to reduce NOx emissions.

Additionally, the combination of US '766 and EP '744 do not disclose a method to reduce soot-thickening of a lubricating oil, to improve fuel economy, to improve fuel durability, to give superior oil sludge performance, to give superior wear protection, or to extend the service time between oil drains.

However, since the composition as taught by US '766 in view of EP '744 and US '919 could be utilized in internal combustion engines comprising a cooled EGR system, it is the examiner's position that any of the listed methods, which actually represent performance enhancing characteristics of the prior art compositions, would be intrinsic to those compositions.

10. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kapuscinski (US 4,820,776) in view of Gutierrez (US 4,632,769).

US '766 discloses a lubricating composition comprising an olefin polymer grafted with a derivative of phenothiazine. However, US '766 is silent regarding the grafting process.

US '769 also discloses a lubricating composition comprised of an additive that is the product of an ethylene-propylene copolymer grafted with a carboxylic acid (column

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1, lines 8-22). The grafting method is conducted in bulk in an extruder or masticator, which encompasses an intensive mixing device (column 5, lines 9-17). Therefore US '769 teaches that it is known in the art to use these devices to conduct a grafting process. Since US '766 is silent regarding the mixing process to graft the polymer and US '769 also discloses a grafting process with an extruder or masticator, which mixing encompasses, it would have been obvious for US '766 to also utilize the specific intensive mixing devices disclosed by US '919.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy Lang whose telephone number is (571) 272-9057.

The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on (571) 272-4963. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/21/2007
Amy T. Lang

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SUPERVISORY PATENT EXAMINER
3/2/07.